Application No. 09/921,066
Date of Response 02/11/2004
Reply to Action of 8/13/2003

LISTING OF CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) ~~A cardiac assist device comprising means for connecting said cardiac assist device to a heart, means for furnishing electrical impulses from said cardiac assist device to said heart, means for ceasing the furnishing of said electrical impulses to said heart, means for receiving pulsed radio frequency fields, means for transmitting and receiving optical signals, and means for protecting said heart and said cardiac assist device from currents induced by said pulsed radio frequency fields, wherein said cardiac assist device contains a control circuit comprised of a parallel resonant frequency circuit and means for activating said parallel resonant frequency circuit.~~

A cardiac assist device comprising

means for delivery of electrical current from said cardiac assist device to a heart wherein said means for delivery of electrical current is in electrical communication with said cardiac assist device and said heart,

means for transmitting electrical current from said heart to said cardiac assist device wherein said means for transmitting electrical current is in electrical communication with said cardiac assist device and said heart, and

means for ceasing the flow of electrical current through a first circuit wherein said first circuit is selected from the group consisting of said means for delivery of electrical current, said means for transmitting electrical current, and combinations thereof, wherein said means for ceasing the flow of electrical current is controlled by a control circuit which is adapted to be responsive

to an activation source selected from the group consisting of an optical activation source, a direct current activation source, and combinations thereof, wherein said means for ceasing the flow of electrical current is disposed between said cardiac assist device and said means for delivery of electrical current and said means for transmitting electrical current, and means for receiving pulsed radio frequency fields from an electromagnetic source external to said cardiac assist device, wherein said means for receiving is selected from the group consisting of said means for delivery of electrical current, said means for transmitting electrical current, said means for ceasing the flow of electrical current, and combinations thereof.

2. (Canceled) ~~The cardiac assist device as recited in claim 1, wherein said means for activating said parallel resonant circuit comprise optical means.~~

3. (Currently Amended) The cardiac assist device as recited in claim ~~[[2]]~~ 1, wherein said ~~optical means for activating said parallel resonant circuit~~ control circuit comprises an optical switch.

4. (Currently Amended) The cardiac assist device as recited in claim 3, wherein said optical switch comprises ~~[[a]]~~ a pin type photodiode.

5. (original) The cardiac assist device as recited in claim 4, further comprising an optical fiber connected to said optical switch.

6. (Currently Amended) The cardiac assist device as recited in claim 3, further comprising said activation source wherein said optical switch is activated by light from ~~[[a]]~~ said activation ~~light~~ source.

7. (Currently Amended) The cardiac assist device as recited in claim 6, wherein said ~~optical switch~~ control circuit is adapted to be disposed within a biological organism.

8. (Currently Amended) The cardiac assist device as recited in claim 7, wherein said ~~light~~ activation source is disposed outside of said biological organism.

9. (Currently Amended) The cardiac assist device as recited in claim 7, wherein said ~~light~~ activation source is adapted to be disposed within said biological organism.

10. (Currently Amended) The cardiac assist device as recited in claim 8, wherein said ~~light~~ activation source provides light with a wavelength of from about 750 to about 850 nanometers.

11. (Original) The cardiac assist device as recited in claim 1, wherein said cardiac assist device is a pacemaker.

12. (Currently Amended) The cardiac assist device as recited in claim 1, further comprising a magnetic resonance scanner, wherein said electromagnetic source is ~~pulsed radio frequency fields are received from [[a]]~~ said magnetic resonance scanner. ~~imager.~~

13. (Currently Amended) The cardiac assist device as recited in claim 1, further comprising means for varying the quality factor of said ~~parallel resonant circuit~~ means for ceasing the flow of electrical current.

14. (Currently Amended) The cardiac assist device as recited in claim 13, wherein said means for varying the quality factor of said ~~parallel resonant circuit~~ means for ceasing the flow of electrical current is a variable resistor.

15. (New) The cardiac assist device as recited in claim 1, wherein said means for receiving pulsed radio frequency fields is adapted to receive pulsed radio frequency fields in the range from about 30 MHz to about 1000 MHz.

16. (New) A cardiac assist device comprising a pacing lead and a sensing lead wherein said pacing lead and sensing lead are in electrical communication with said cardiac assist device and a heart, further comprising a resonant circuit wherein said resonant circuit controls the flow of electrical current through a first circuit wherein said first circuit is selected from the group consisting of said pacing lead, said sensing lead, and combinations thereof, wherein said resonant circuit is controlled by a control circuit which is adapted to be responsive to an activation source selected from the group consisting of an optical activation source, a direct current activation source, and combinations thereof, wherein said resonant circuit is disposed between said cardiac assist device and said pacing lead and said sensing lead, and an antenna adapted to receive pulsed radio frequency fields from an electromagnetic source external to said cardiac assist device, wherein said antenna is selected from the group consisting of said pacing lead, said sensing lead, said resonant circuit, and combinations thereof.

17. (New) The cardiac assist device as recited in claim 16, wherein said control circuit comprises an optical switch.

18. (New) The cardiac assist device as recited in claim 17, wherein said optical switch comprises a pin type photodiode.

19. (New) The cardiac assist device as recited in claim 18, further comprising an optical fiber connected to said optical switch.

20. (New) The cardiac assist device as recited in claim 17, further comprising said activation source wherein said optical switch is activated by light from said activation source.

21. (New) The cardiac assist device as recited in claim 20, wherein said control circuit is adapted to be disposed within a biological organism.

22. (New) The cardiac assist device as recited in claim 21, wherein said activation source is disposed outside of said biological organism.

23. (New) The cardiac assist device as recited in claim 21, wherein said activation source is adapted to be disposed within said biological organism.

24. (New) The cardiac assist device as recited in claim 22, wherein said activation source provides light with a wavelength of from about 750 to about 850 nanometers.

25. (New) The cardiac assist device as recited in claim 16, wherein said cardiac assist device is a pacemaker.

26. (New) The cardiac assist device as recited in claim 16, further comprising a magnetic resonance imager, wherein said electromagnetic source is said magnetic resonance imager.

27. (New) The cardiac assist device as recited in claim 16, further comprising means for varying the quality factor of said resonant circuit.

28. (New) The cardiac assist device as recited in claim 27, wherein said means for varying the quality factor of said resonant circuit is a variable resistor.

29. (New) The cardiac assist device as recited in claim 16, wherein said antenna is adapted to receive pulsed radio frequency fields in the range from about 30 MHz to about 1000 MHz.